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ANIMAL EXPORT INSPECTION FACILITIES

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ANIMAL EXPORT INSPECTION FACILITIES

Herman F. Mayes and T. F. Webb¹

In recent years, the volume of livestock, particularly breeding animals, exported from the United States has increased drastically and will continue.

In shipping animals to foreign countries, the primary considerations are the efficient and economical care, welfare, and safety of the animals.

The facilities and procedures described in this report are necessary for assembling, handling, inspecting, and loading on aircraft for shipping to foreign destinations. In general, the facilities provide for trucking all species of livestock to the facility; weighing livestock on receipt or before shipment; moving livestock to holding pens; feeding, watering, and resting the livestock; moving livestock through an inspection chute for individual inspection or testing; returning the livestock back to holding pens; and, fi-

nally, moving the livestock onto the aircraft for transporting to the foreign country.

The facilities and procedures described are only one phase of exporting livestock. The other phases involve (1) moving the livestock from the production area to the export facility, (2) air transporting them to the destination, and (3) moving the livestock from a foreign airport to their final destination.

Shipments to foreign destinations are made from 11 airports. Only a few of these airports have facilities similar to those described in this report. However, new facilities are essential for the expected increases in foreign shipments.

This report presents a list of the essential components needed in an export facility. These components are described in general terms with specific recommendations made in some areas. Several suggested layouts are included with the operation procedures.

FACILITY COMPONENTS

General Considerations

Some requirements by the Animal and Plant Health Inspection Service (APHIS) are necessary for its regulatory functions; these impose some constraints on the design of a holding facility for animals to be exported.

One requirement is the physical separation of animals into different shipments destined for different countries. Ideally, only one shipment would use the facility at a time. Shipments to some foreign countries may be from 5 to 25 animals whereas other shipments might fill a plane. For this reason, considering one shipment in the facility at a time is impractical and uneconomical.

Limiting the physical size of the holding pens is essential to good utilization of space. Empty large pens serve as the buffer between different shipments but result in poor use of space. A general recommendation: construct some of the pens the same width as alleys, 10 feet wide. Some of the pens could be twice as wide, and approximately 80 percent of the total usable pen space could be in these larger pens.

Another important consideration is the movement of livestock within the facility. Using two gates per pen, on most of the pens, located on opposite ends of the pens and on different alleyways, permits an easier flow of animals through the facility. When pens are the same width as alleys, then any pen can function as an alleyway. The use of two gates per pen and located on opposite ends of the pen could also ease cleaning when a skid steer loader is used.

The design and layout of pens, pen gates, and block gates are also important in providing an orderly movement of livestock. When livestock are moved within the facility, they should not be forced to crowd around the end of a partly opened gate to enter a temporary or holding pen. The same would apply when they are

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moved from the facility to the aircraft loading chute.

Several layouts, which incorporate the above ideas and still meet the other APHIS requirements, are possible. The suggested layout (fig. 1) in this report incorporates these ideas.

The components or areas are generally described in the order of usage.

Building

Construct the building of metal or wood to house the animals. A metal building would be of the rigid-frame type; a wood building would be of treated pole frame-type with a truss to support a metal roof. Several commercial firms manufacture such buildings.

The different layouts presented in figures 2, 3, 4, and 5 are based on 20 feet of incremental length so they can be increased or decreased by 20-foot increments. When the building is constructed, increasing the length by the 20-foot increments is still possible.

Building width in these layouts varies from 90 to 150 feet. Metal buildings to span the 150 feet are available with supports for the roof beams. A wooden truss would not span this width. The practical limitation on wooden trusses is 60 feet. Trusses to span lesser widths in multiples of 10-foot increments are available.

When pole frame buildings are used, erect two or more buildings side by side.

The layouts presented (figs. 2, 3, 4, and 5) are for different lengths and widths and can accommodate from 100 to about 500 head of cattle each weighing about 1,000 pounds.

One of the layouts, figure 2, is based on a building length of 100 feet and a width of 90 feet with a usable area of 3,400 square feet for holding pens. Additional area for holding pens could be obtained by adding 10 feet or 30 feet to the width of the building. A 10-foot increase in width would increase the holding pen area to 4,200 square feet and the 30-foot increase would increase the area to 5,800 square feet. Increasing the length of this building by 20-foot increments would also increase the holding area.

Truck Dock

The truck dock should be accessible to the road or street where the export facility is located. Space in the area outside the building and around the truck dock should be sufficient for turning, maneuvering, and backing long semi-trailer trucks.

Substantially construct and equip the truck dock with a bumper strong enough for the heaviest truck expected. A self-aligning bumper would be preferred.

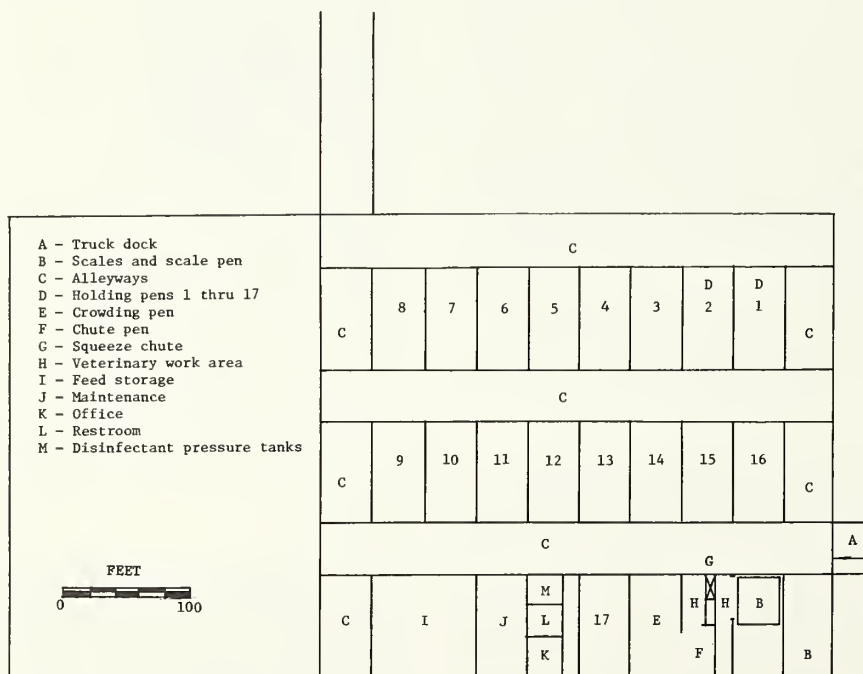
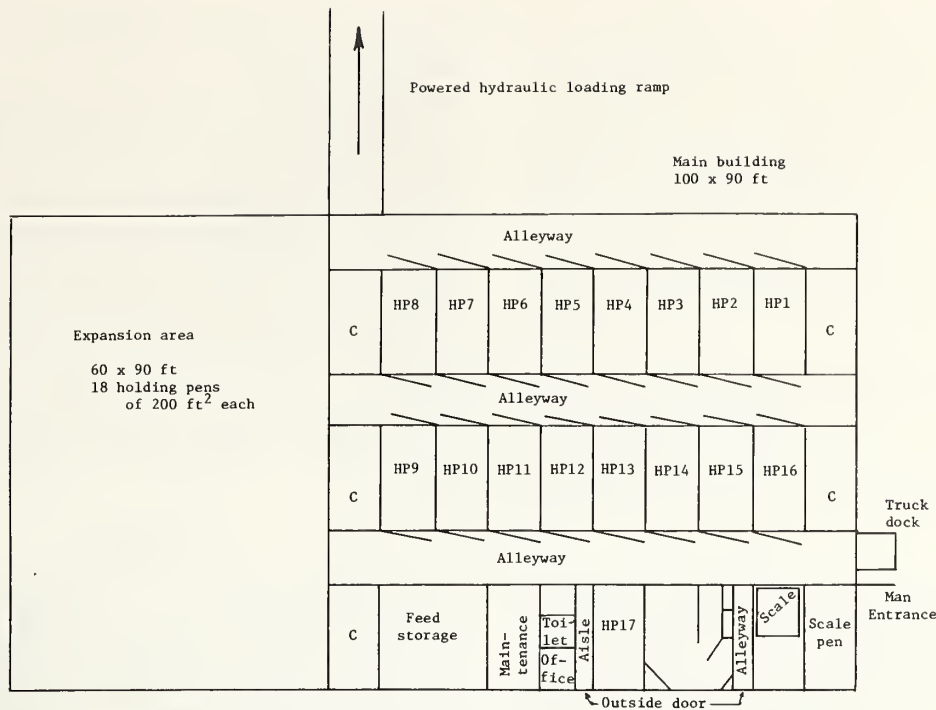
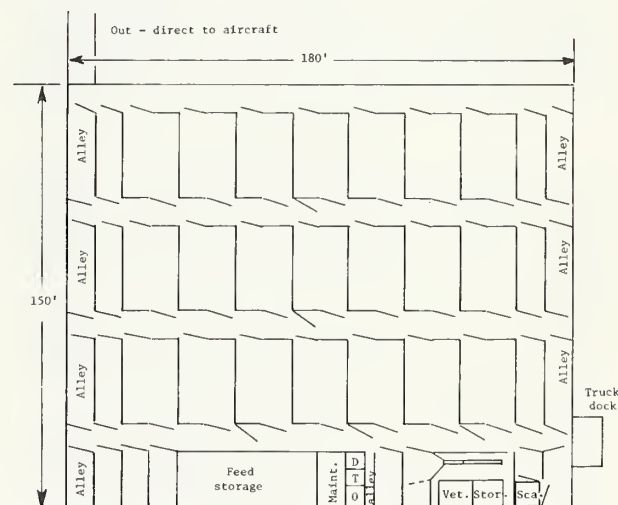


FIGURE 1.—Essential areas of a livestock export facility.



Pave the approach with asphalt or cement for good drainage. A common procedure is to slope the approach, not more than 2 or 3 percent, toward the dock. This slope also allows a truck to coast into position and to be held in contact with the dock by gravity. If practical, plan the truck dock at the same elevation as the pen floors. This permits the animals to move directly off the truck without using a ramp. If a

ramp is needed, then the preferred type is a stepped, instead of a sloping, ramp. Animals are less likely to slip on a stepped ramp.



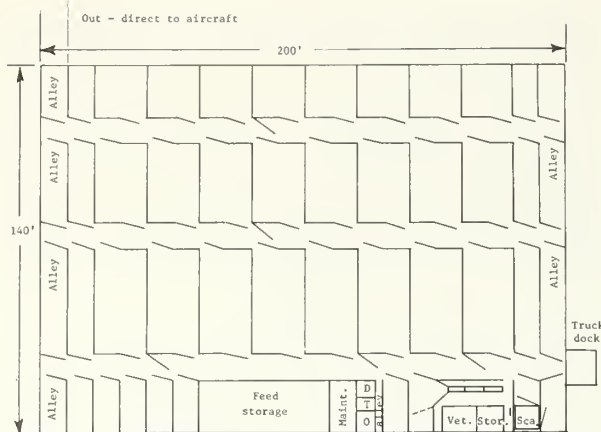


FIGURE 5.—Design to hold approximately 500 head of cattle.

Building a variable height dock is desirable to handle double- and triple-deck trucks. The variable height is achieved by raising the front end of the dock to the desired height by a winch or hydraulic piston. The back or lower end of the dock is free to move in or out as the dock is raised or lowered. Such docks are constructed of steel or wood and have cleats to provide footing for the livestock.

Ideally, the export facility would be located on the airport grounds and next to a hard pad. The hard pad permits an aircraft to be towed and parked next to the facility to allow the animals to move directly from the facility to the aircraft by use of a suitable loading chute.

If the export facility is not located next to a hard pad, then reloading the animals at the truck dock will be necessary for movement to an area where they can be loaded on the aircraft. The truck dock where the animals are unloaded from the truck could be used.

Scales

Scales selected for use in the export facility should have a maximum capacity of 10,000 pounds. Several different types and models are available.

Stock racks or scales should be metal or wood, well braced, and anchored firmly to the platform.

Gates attached to the stock racks should open easily and have strong positive latches. An entrance and exit gate is preferred that permits straight-through movement of livestock.

The scale platform in the suggested layout (fig. 1) is 8 or 9 feet wide and 9 feet long. This

platform should be concrete and have a roughened finish.

A small house at the side of the scale platform houses the weigh beams or indicating dials and protects these units from mechanical damage or water damage during cleaning.

When weighing animals from the holding pens, the pen located next to the scale platform is used as a temporary holding pen. Animals can be held in this pen before or after they are weighed. In the latter case, the animals may have been moved from a regular holding pen to the scales or may have been held temporarily in the alleyway before being weighed, figures 6 and 7.

Alleyways

The alleyways (fig. 1) for an export facility are 10 feet wide, the same width as the pens. Pen gates, when opened, block the alley.

The floor of the alleyway is concrete with a rough or skid-resistant finish to provide footing for the animals. Using a wooden frame to score the concrete before it sets results in grooves about 4 inches on the center, $\frac{1}{2}$ inch deep, and $\frac{3}{4}$ inch wide. A disadvantage of these grooves is that they trap water during cleaning. During scoring, extreme care should be used to insure that the grooves will drain. An alternative to the scoring would be to incorporate powdered carborundum on the surface of the alley.

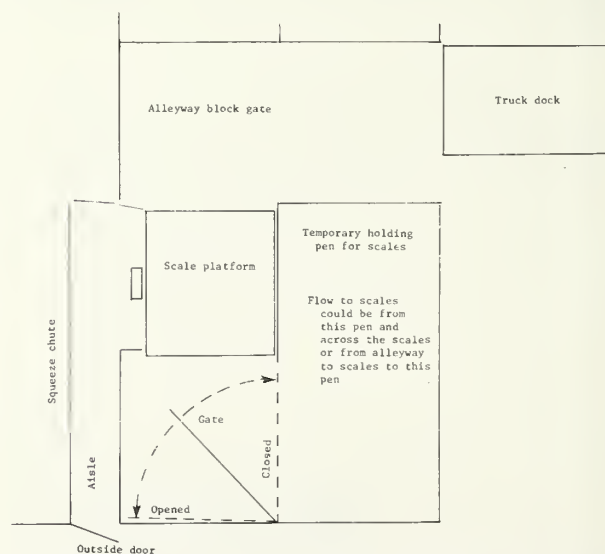


FIGURE 6.—Layout for possible arrangement for the scale area.

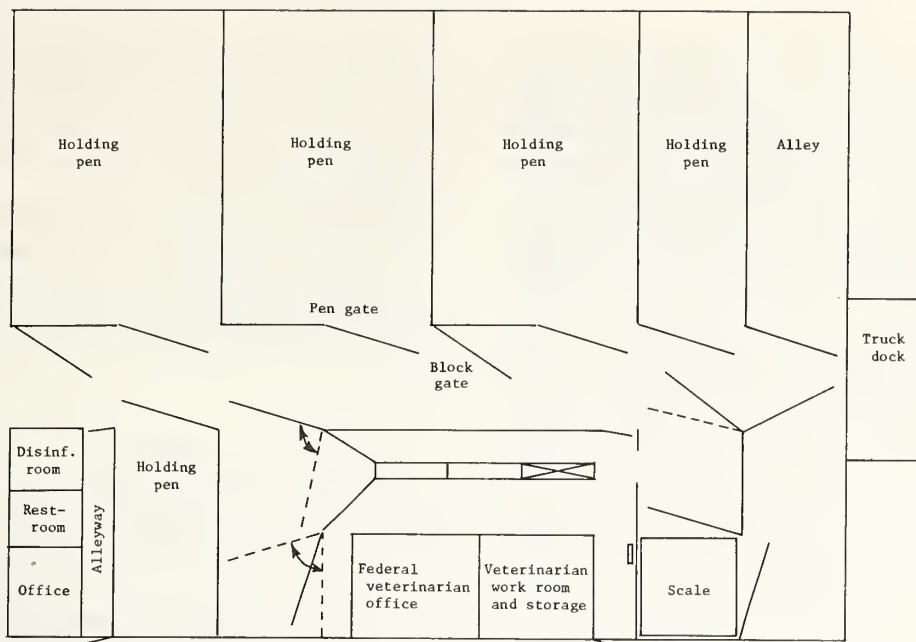


FIGURE 7.—Layout showing a possible weighing area and the area associated with veterinary services.

Drainage from the alleyway during washing is toward floor drains in the alleyway. The slope should be about 2 percent (fig. 8).

In constructing a metal building, erect the supporting steel on piers that are 6 to 8 inches above the level of the finishing concrete floors. This will prevent wash water and waste material from standing around these supporting members and increase their life.

When a treated pole frame building is built, the floor around these poles should be tapered upward around the poles. This will prevent wash water and waste material from standing around the poles and will increase their life.

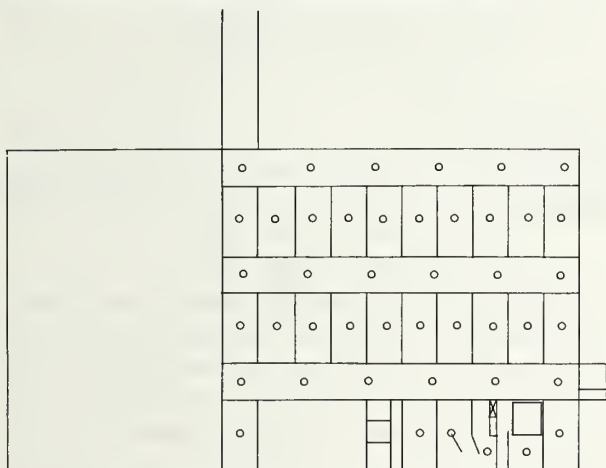


FIGURE 8.—Location of drains.

Holding Pens

Space requirements of holding pens is 35 square feet for each 1,000-pound animal as listed by APHIS is CFR 9, paragraph 91.3.

The pens in all suggested layouts (figs. 1-5) are 10 and 20 feet wide and vary from 20 to 40 feet in length. The 20-foot wide pens have single 10-foot gates on each side that open into separate alleyways.

Floors of the holding pens are also concrete, with a slightly roughened finish made by a broom or wood float.

Pens drain during washing into floor drains in the center of the pens. The floor should have an approximate slope of 2 percent toward the drains.

An alternate location for the pen drains, figure 8, is in the alleyways. This would reduce the cost for sewers. When pen widths are the same as the alleys, the maximum distance between drains should be twice the alley width. A single drain could be located to drain four pens. Care should be exercised to maintain the slope of the floors to this drain.

Another important item with holding pens is an identification system for these pens. The common method used is to attach a metal plate, about 8 by 12 inches, to each holding pen gate. Letters or numerals of contrasting color to the plate are painted on the plate.

Fences

The fences of wood or metal between the holding pens should be sturdy enough to hold all species of livestock. Because cattle and possibly horses are going to be handled in the export facility, the fence should be high enough to contain these animals. Others would not require a high fence. Although a fence 5 feet high is considered adequate for cattle, a 6-foot high fence is recommended.

Wooden fences should be treated with a good quality preservative to prolong their life. Rectangular wooden posts securely anchored in the concrete floors could serve a multi-purpose—corner, gate, and line posts. Use hip rails on the opposite side of the post from the fence boards. These hip rails are about 3 feet above the floor and are designed to prevent injury to the animal if it should be crowded against the square posts.

A split post fence would eliminate the need of hip rails. Construct this fence by splitting round-treated posts and inserting the wooden fence between the two halves of the posts. Use spacer blocks in the portion of the post below the floor. When constructing the wooden fence, no more than two fence rail splices should be made on any post.

The main disadvantage to the split post fence would be the cleaning and sanitizing of the space between the split post and between the fence rails. To eliminate this problem, place filler blocks between the fence rails and between the halves of the split post. This would increase the cost of this fence.

Several livestock markets have used oil well casing and sucker rods welded together for posts and fences. Some of the commercial corral

fences made of metal would be satisfactory.

The primary concern for using the above materials for fences is the durability of the material with frequent washings. Treating wood or using a rust preventative metal paint is recommended.

Space the rails in the fences and gates close enough to the floor and to each other to prevent such small animals as 50-pound pigs from crawling through. The bottom rail should be 2 to 4 inches above the floor for sanitation purposes.

Gates

Standardize the design of the metal or wood gates used in the export facility. The design factors involved are height, length, gate hinges, and latching hardware. Metal gates are generally made of tubular materials welded together. Some companies manufacture gates of tubular aluminum alloy. Aluminum gates are lightweight but are not easy to repair since welding them requires special equipment.

The tubular metal gates are preferred because they are easier to clean and sanitize than are wooden gates.

Holding pens gates should be of sufficient length when opened to block the alley.

The pen gates in the suggested layout (fig. 2) are hung so the livestock movement in and out of the pen is natural and not around the end of the open gate.

Block gates located in each alleyway near the middle of the length of the alley are used to block off the alleyway so it can be a temporary holding pen when moving livestock. The gates must swing 180 degrees to remain at the side of the alleyway when not in use.

INSPECTION AREA

A primary function of an export facility is the inspection or testing of each individual animal. An area for this is included in the layout in figure 1. This area includes a crowding pen, squeeze chute pen, squeeze chute, and a work area for the veterinarian.

Crowding Pen

The crowding pen has the same width as the regular holding pens, and construction is the same. This pen serves as a temporary holding

area for animals about to enter the squeeze chute pen.

Squeeze Chute Pen

The squeeze chute pen, small pen located immediately before the animals enter the squeeze chute, is formed on two sides by two small gates that can rotate 360 degrees. One of the gates remains latched to the side of the squeeze chute whereas the other gate rotates to decrease the pen area and thus forces the ani-

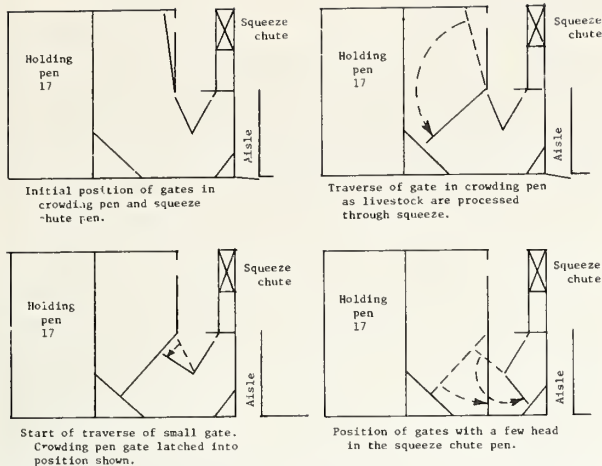


FIGURE 9.—Operation of gates to use small squeeze chute.

mals into the squeeze chute. Figure 9 illustrates the operation of these gates.

Cover the small gates with a sheet of lightweight metal or marine plywood so that animals cannot see through these gates. The other fences around this pen should also be covered. Thus, the only open area the animal can see is the squeeze chute, which helps to get the animals into it.

The squeeze chute pen in the larger building layout (fig. 7) is 10 by 20 feet. A 10-foot gate is along the side of the pen next to the federal veterinarian's office. By using this gate and the pen gate as shown in figure 7, crowding the animals into the squeeze chute is possible. Another pen 10 by 20 feet adjoins this pen, and it could also be used to hold animals by making one-half of the fence between these two pens a gate.

Squeeze Chute

The squeeze chute for restraining animals during an inspection should be substantially constructed to accommodate large animals. Several commercial models are available, but no effort will be made in this publication to discuss the merits of one brand over another brand.

Installing the squeeze chute is important. It should be anchored firmly to the floor. Some models require that the floor be built up slightly; the floor in the squeeze chute pen and the squeeze chute should be the same level.

Easy cleaning and disinfection of the squeeze chute is important. Drainage should be adequate to avoid any water accumulating and standing next to the chute.

The chute normally is 28 to 30 inches wide and 21 feet in length in larger buildings. This permits three animals to be processed before crowding more animals into the chute.

Animals move from the chute after processing to a pen containing the scale and then to the adjacent pen or into the main alleyway. In the alleyway, a block gate opposite the squeeze chute would restrain them.

Veterinary Work Area

The area around and on both sides of the squeeze chute is the veterinary work area. On the layout, this area provides adequate width for the movement of the veterinarian and assistants inspecting and testing livestock.

Between the squeeze and crowding pen is an area large enough for a work table, storage cabinet, or other equipment to aid the veterinarian. Normally, the veterinarian has an office elsewhere in which to do paper work associated with the exportation of livestock. A table or bench on which inspection papers can be stacked, sorted, or processed is essential. The cabinet is to store and lockup veterinary inspection equipment that does not need refrigeration or a sterilized storage.

The layout for the larger building contains an office for the use of the federal veterinarian and a combination work and storage room. These rooms are located between the squeeze chute and the outer wall of the building. Either of the rooms could be accessible from the outside of the building. Allow about 230 square feet for these two rooms; the rooms in figure 7 contain 120 to 100 square feet.

Reject (Detention) Pen

One or more pens in any of the layouts could be used to hold animals that are detained, rejected, or withdrawn from a shipment. These animals have been inspected before being moved to the export facility. Their detention may result from some minor ailment or an injury enroute to the export facility.

Because the number of animals that may be detained from a given shipment is not known, establishing a size for this pen is impractical. Consider using several small pens for detention. Separating these animals may be necessary on the basis of sex, species, or incompatibility.

CLEANING AND SANITIZING

Federal regulations require cleaning and disinfecting all pens, alleyways, and inspection area before repeated use by other animals to be exported. The normal procedure is to clean and disinfect those parts of the facility used by each shipment immediately or shortly after they have departed the facility. These parts are washed with high pressure water and disinfectant that is applied from a pressure tank. A small room to house pressure tanks, pumps, and related items is included in the suggested layouts.

A means to have disinfectants premixed, pressurized, and readily available to all areas of the export facility is to build a pressure line supplying mixed disinfectants to all areas. The disinfectant is poured into a pressure tank, water is supplied, the mixture is agitated or mixed, and the tank is closed and sealed and then pressurized. This mixture feeds into the pressurized line.

Several methods for mixing disinfectants and introducing them into the line are available besides the one described. Liquid proportioners mix a prescribed amount of disinfectant from a tank containing disinfectant with an amount of water. This mixture then passes through a pump to the line.

Another method uses venturi mixing jets to introduce disinfectant into a pressurized disinfectant line. The jets are equipped with adjustable flow valves to meter the amount of dis-

infectant entering the line. Check valves prevent the disinfectant solution from entering the water supply line and the disinfectant container. These are essential to assure correct and safe operation of the venturi mixing jets. All three methods are commercially available.

Because animals may be going to different foreign countries in the export facility, they need to be physically separated from one another. That is, they cannot be in adjoining pens from which they could make physical contact through the fence. This also requires the wash water from each pen enter the sewer through a drain in that particular pen. Similarly, the wash water from the alleyways cannot enter this pen to reach a sewer drain.

The placement of drains to accomplish the above safeguards are shown in figure 8. The sewers installed to handle the wash water should be a minimum of 8 inches in diameter.

Influencing the time required to clean pen floors and alleyway floors is the roughness of the floor. The rougher the finish of the concrete floor, the more time and water needed to clean the floor.

Drains in the holding pens should be built so a flat, steel plate could be placed over the drain opening. When bedding is used in the pens, this plate prevents material from entering the sewers. After the bedding has been removed, the plate can be removed and the pen washed.

LIGHTING

Lighting is one important feature overlooked or taken for granted. In a completely enclosed metal building, lighting becomes a problem.

The use of colored fiberglass roof panels will allow some natural light to enter the building; artificial lighting, however, is necessary. Lighting fixtures need to be dust, insect, and vapor proof. The first two of these reduce the illumination level from artificial light sources.

Several different reflectors are available for use with artificial light sources. The most common for use in the export facility are deep or shallow bowl reflectors. The type for a specific location will depend on the height and spacing of the light sources.

Recommended for this facility are color corrected mercury lamps that are available in sizes

ranging from 100 to 500 watts. A big disadvantage of these lamps is the warm-up period required, which ranges up to 5 minutes, before they reach their peak output of light. These lamps, however, have a higher lumen output, light level, than florescent lamps and last longer than standard incandescent bulbs.

The illumination level for the facility is 20-foot candles for holding pens and alleyways. Increase to 100-foot candles in the veterinary work area and the squeeze chute area. This level of illumination is provided by four fixtures located as shown in figure 10.

Thus, for the inside of the building, we suggest a dust, insect, vapor proof fixture, with a shallow or deep bowl reflector, and color corrected mercury vapor lamp to provide either

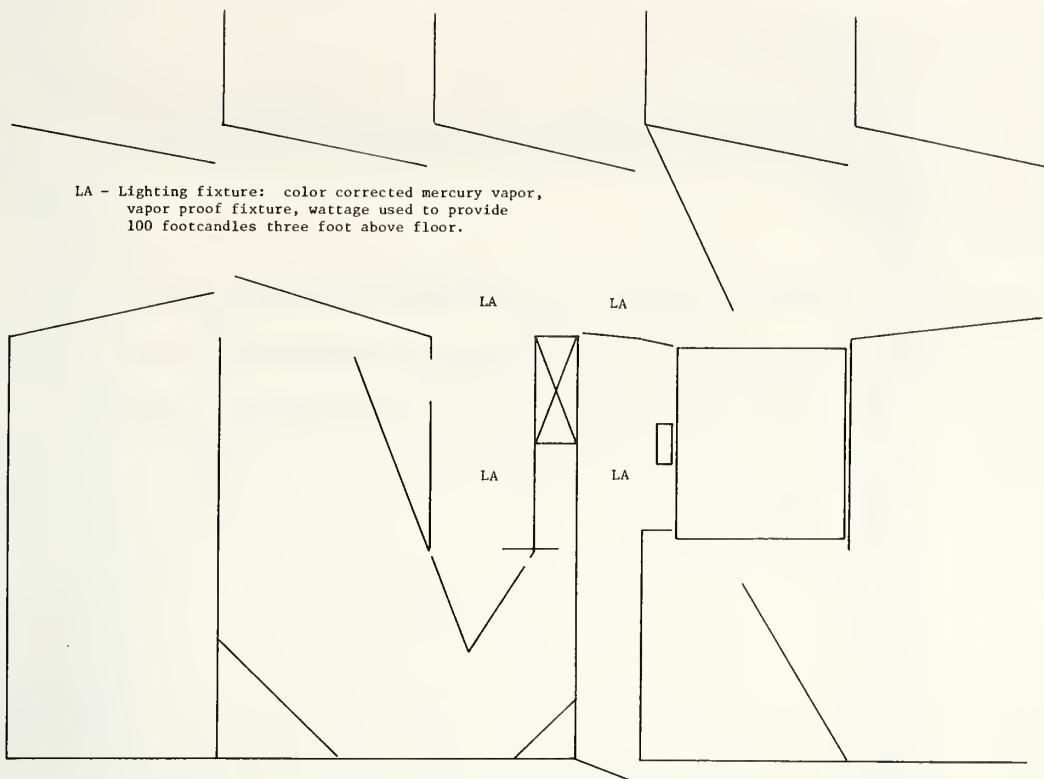


FIGURE 10.—Layout showing lighting arrangement in the inspection area.

20- or 100-foot candles measured 3 feet above the floor.

Exterior lighting should follow current acceptable standards for lighting around the out-

side of the building. The illumination level suggested for the truck unloading area and the aircraft loading is 5-foot candles.

OTHER AREAS

Feed Storage

Designated in the layout for feed storage, this area can also be used to store bedding. The stored feed may range from bulky hay to pelletized complete feeds.

This storage area may be outside the export facility building, but, if it is, it should be close enough to move feed conveniently. When the storage is in the export facility building, then it should be isolated from the rest of the building. This can be done by erecting a solid wall between the feed storage and the holding pens. A wall will prevent excessive amounts of dust and feed particles from entering the pen area.

Feed is necessary because some animal shipments, or a portion of them, are in the export facility over a period during which the animals need feeding.

Maintenance

An area or, preferably, a room is recommended with lockable doors, to serve as a shop area and storage for tools, shovels, pitchforks, and hoses used in washing and disinfecting and for spare parts. This area needs to be completely enclosed with both an inside and outside door.

A small skid wheel loader can be used for cleaning, feeding, and maintenance work. These loaders, often called "bobcats," are manufactured by several companies. Small and compact, they can maneuver inside the facility without many problems. Most of them come equipped with a bucket; attachments for the basic unit are available to make this loader adaptable for several tasks.

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Water and Feed Troughs

Commercial units, small sized, are preferred. The racks for hay can be fabricated by welding steel rods together. In some parts of the United States, heated waterers are necessary.

Office

The main office of the facility will probably be in a separate building from the livestock building. In our suggested layout, we have provided for a small office in the livestock building. This room is immediately off a 3-foot aisle that goes from the outside of the building to one of the livestock alleyways.

The office is 7 by 8 feet or it might be slightly larger by reducing the space allocated for a rest-room. This office may contain a desk, filing cabinet, chair, and telephone. The telephone could be answered here better than on an extension phone in the holding pen area. The desk could provide a work area for inspection or health reports on the livestock.

Restroom

A small room next to the office is the rest-room in the suggested layout. This provides space for a lavatory and stool. A shower room and lockers would be provided in the main office building.